Q DRIVE SERIES

CLASS AB AMPLIFIERS

CADENCE

Thank you for purchasing a Cadence Q Series amplifier. Over the past years, the technology used to create audio amplifiers has grown by leaps and bounds. We have tens of thousands of satisfied customers still using our first generation Ultra Drive amplifiers which are more than 10 years old. Our competition is satisfied with just continuing to build the same units year after year without thought for improvement, but not Cadence. We consider it our mission to use our expertise in developing the latest technologies and to bring you the absolute best sounding, most powerful amplifiers on the market and of course at a reasonable price. We are very proud to introduce this third generation of Q Series amplifiers featuring C-FORCE technology, "ARVA" and "ADR" circuitry. You will be amazed at the quality and power that these new amps offer. You will "Boom-Harder!" with Q Series amplifiers.

We have spared no expense in designing these amplifiers, creating the most rugged, reliable, powerful and best performing amplifiers. In fact we are so sure of the quality we backup every Q Series amplifier with our exclusive two-year warranty which exemplifies our commitment to excellence in car audio musical reproduction. (See enclosed warranty card for details.)

Please read this installation guide carefully for proper use of your Cadence power amplifier. Should you need technical assistance during or after your installation please call our technical-line between 9:30 am and 5:00 PM EST at 732/370-5400. Read this entire guide fully before attempting your installation.

WARNING: BE AWARE! Use of this amplifier at extreme high volumes for extended periods of time may cause hearing loss and or hearing damage. During periods of prolonged high volume levels it is recommended that you use ear safety devices. Playing Cadence amplifiers at high volume levels while driving will impair your ability to hear necessary traffic sounds. While driving always keep your sound volume at reasonable levels. We at Cadence want you listening for many years to come.

When installing the amplifier, secure it tightly. An unmounted amplifier in your car can cause serious injury to passengers and damage to your vehicle if it is set in motion by an abrupt driving maneuver or short stop.

GOLD PLATED TERMINALS:

All the terminals on the amplifier are solid brass and gold plated for high conductivity and minimum impedance loss. The power and ground terminals are extra large and capable of accepting 4-8 gauge wire. The speaker terminals can accept 16 gauge wire. When wiring the amplifier, be sure to strip just enough wire that fits into the terminal so that bare wires do not touch each other, or the amplifier chassis and cause a short circuit.

POWER AND PROTECTION CIRCUITRY:

Q Series amplifiers feature our unique IC controlled protection circuitry. This sophisticated circuit constantly monitors the heatsink internal temperature and various voltages, adjusting the amp automatically and protecting it from dangerous conditions. The 2 LEDs located on the input side of the amplifier provide indication of the amplifier status, the Power LED will light when the amplifier is receiving proper power, ground and remote voltages and the IC monitoring sequence indicates the amp is functional. In case the amplifier encounters a diagnostic condition as listed below, the second LED will light indicating a Diagnostic condition. When a diagnostic condition is sensed the amplifier will then turn into a self preservation mode and if the cause of the diagnostic condition is not corrected will eventually shut off. There are certain critical diagnostic conditions which will turn the amplifier off immediately.

1. Speaker short circuit.

2. Input Overload.

3. Thermal overload.

4. Reverse Polarity.

To reset the amplifier, you must first diagnose what caused the problem, correct the fault and restart the system. See the Trouble Shooting page for further details.

MUTE CIRCUIT:

The Q Series amplifiers feature an anti-thump, mute and delay circuit. This eliminates irritating and speaker damaging turn-on and turn-off transients normally experienced with less expensive amplifiers.

BASS DRIVE EQUALIZATION CIRCUITRY:

A narrow "Q" shelving equalization circuit is included in the amplifiers. The equalization system is preset at 45Hz. The boost control allows you to add up to 12dB of Bass Drive effect. Utilize the Bass Drive to tailor your bass response to your systems needs. Please keep in mind that by adding Bass Drive you are adding stress on your speakers. Make sure your speakers can handle the extra power output! It would be foolish to add 12dB of gain to low excursion 8" and 10" Subwoofers .

“ADR”: - ACTIVE DYNAMIC REGULATION

Cadence Q Series amplifiers feature our proprietary ADR, Active Dynamic Regulated power supplies. 100% HexFET devices are utilized in the power supply for high speed (100KHz) switching frequencies. The power supplies are capable of supplying the main amplifier with a considerable amount of reserve voltage for peak "high demand" situations. The ADR circuit provides full bandwidth power for authoritative bass response, high current output into low impedance loads and increased headroom. The ADR is supplied with power via a high speed, high temperature capacitance bank and 100% pure copper rails on the PCB enabling fast transient response to musical demands.

CLASS AB AUDIO STAGE PERFORMANCE

The audio output section of the Q Series amplifiers feature Japanese studio grade, high current BiPolar audio transistors. Unlike other manufacturers who use a host of different type transistors, not originally designed for audio output, ie: power supply transistors, motor control transistors to produce the audio signal, (You can only imagine what they sound like.) Cadence uses only true audio transistors. These transistors were designed and engineered to produce music. That’s why Cadence amplifiers sound better. They are cleaner with lower distortion, higher current capable and more reliable. We challenge you to test listen a Cadence amplifier and hear the difference yourself.

"ARVA" - AUTOMATIC RAIL VOLTAGE ADJUSTMENT CIRCUITRY:

Cadence Q Series amplifiers feature "ARVA" circuitry in their power supply. This circuit constantly monitors the output stage and under high current demands will adjust the power supply rail voltages so that enough power is available for peak situations. The "ARVA" also improves the damping factor of the amplifier when playing low impedance mono loads. Cadence Q Series amplifiers have tighter sounding bass reproduction thanks to this unique circuitry.

BATTERY VOLTAGE:

CadenceQ Series amplifiers are rated and regulated to 13.8 volts and below. Increasing voltage to 14.4 volts will increase the power output of the amplifier in the same proportion. Maximum input voltage is 14.4 volts while the minimum voltage is 12 volts.

DO NOT EXCEED 14.4 INPUT VOLTAGE.

Cadence Q Series amplifiers are not competition style amplifiers!

PROTECTION CIRCUITRY:

Cadence amplifiers incorporate many outstanding protection circuits to help protect the amplifier from being damaged during operating conditions.

Thermal Protection: When the amplifier reaches an unsafe operating temperature of 80 degrees Celsius the amplifier will turn off. Once the amplifier cools down, simply reset the amplifier by its Remote connection, (turn the amplifier off and then on again once you have given the amplifier a chance to cool down) and the amp will once again begin to play.

If you live in a hot climate we suggest installing additional cooling fans in your trunk to exhaust the hot air which can build up in the trunk this will help keep the ambient temperature in the trunk as low as possible so that your amps work flawlessly and without any musical interruption.

Speaker Short Circuit Protection: Should your speakers short circuit due to voice coil burn out, or should the amplifier sense an impedance too low to handle, the Protection LED will light, indicating a diagnostic condition. Turn off your system, disconnect one speaker at a time and try to determine which speaker might be faulty. Correct the condition and restart the amplifier. You must reset the amplifier by turning off and then on by the Remote power for proper operation after correcting a diagnostic condition.

Clipping or total shutdown may also be a result of a bad ground connection or loose ground. If you find that your speakers and speaker wires are not shorted, please check your ground connection.

Input Overload Protection: This circuit will either shutdown the amplifier completely or make the amplifier spurt on and off indicating that it is in a diagnostic condition. Turn the system off and reduce the gain on the amplifier or volume from your head unit, this should result in a corrected condition.

DC Offset Protection: Should any DC voltage try to enter the amplifier via the speaker terminals it will cause the amplifier to shut down and not operate until this condition is remedied. This circuit will also protect damaging high DC voltages from reaching your speakers should your amplifier ever miss-function.

INSTALLATION BASICS:

Before you begin with your installation disconnect the NEGATIVE (-) terminal from your car's battery. This safety precaution will avoid possible short circuits while wiring your amplifier. Cadence amplifiers operate on 12-volt negative ground systems only.

It is recommend that you layout your sound system design on paper first. This will help you during the installation so that you will have a wiring flow chart and not miss-wire any of your components.

Mount the amplifier in the trunk or hatch area of your vehicle. Never install an amplifier in the engine compartment or on the firewall. Please be sure to leave breathing room around the amplifier heatsink so that it can dissipate the heat it produces efficiently. The amplifier can be installed either horizontally or vertically.

When mounting the amplifier on the trunk floor, be sure to watch for your gas tank, gas lines and electrical lines. Do not drill or mount any screws where they might penetrate the gas tank of your car.

POWER/GROUND WIRING:

The Q Series amplifiers are supplied with built-in fuses, never replace the fuse that the amp came with, with one of a larger value.

We suggest you construct a Red wiring harness with 2 additional fuse. One fuse should be located near the car battery. This fuse near the battery offers protection against damage from short circuits to the car chassis between the battery and the amplifier. A second fuse closer to the amplifier offers additional safety to the amplifier itself. This fused red power wire should be attached to the amplifier power terminal marked **12V+**.

The wire harness should be made of red primary cable of at least 4-8 gauge. The harness should terminate in a large ring terminal for connection directly to the positive terminal of the car battery. Use a spade plug to attach the wire, which connects to the amplifier location marked **12V+**.

A second black color wire of equal gauge should be used as a ground connection to a welded chassis member. When connecting the ground wire make sure that there is no paint or other insulator blocking a good ground connection. When installing multiple amplifiers, mount them in close proximity so that they can all share the same ground point. Attach the black ground wire to the amplifier screw terminal marked **Ground**.

We recommend that you use the Cadence ZIK-8 or ZIK-4 amplifier installation kit, which contains all the cabling and accessories necessary for a good, reliable installation.

Over the years we have received many an amp back to our service department with melted power/ground terminals. The cause of this is a bad ground connection. When there is a lack of good ground heat builds up at the weakest point which is the contact screw of the terminal. Over time the heat generated will begin to melt the terminal. It is a good practice to feel the power and ground wires with your hands, near their amplifier connection after having played the amp for a while. If the wires feel hot to the touch you probably have a bad or loose connection. If you are sure of your connections and the wires still feel hot to the touch, you should upgrade the gauge of the wire to next heaviest gauge.

REMOTE TURN ON CONECTION:

The remote turn on connection is located on the barrier strip next to the power and ground connections. This connection is responsible for turning the amplifier on and off with the rest of the system. A smaller gauge wire can be used to make this connection to your radio's power antenna lead. Should your system not have any turn on leads, you can wire the remote terminal to an accessory lead, which turns on, with your ignition.

SETTING THE TOP PANEL CONTROLS

AUDIO PREAMP INPUT

The Q Series amplifiers feature RCA preamp inputs. Run RCA cables from your sound source to the inputs of the amplifier. We suggest the use of high quality shielded RCA patch cords to help reduce and eliminate unwanted electrical noise from your system.

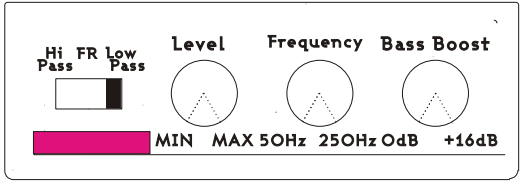
Be sure to run the RCA cables on the opposite side of the vehicle that you used to carry the power and ground leads of the amplifier.

USING THE BUILT-IN LOW PASS ELECTRONIC CROSSOVER

All the Q Series amplifiers feature 12dB per octave fully adjustable low-pass and high pass electronic crossovers.

For Low Pass systems, set the crossover mode switch to LOW PASS. Now the knob marked FREQUENCY will control the low pass frequencies from 50Hz to 250Hz. A frequent mistake made is setting the low pass frequency too low, especially when using vented subwoofer enclosures. We recommend that for most installations you do not set the frequency knob lower than 100Hz (the 12 o'clock position).

When using the amplifiers for component speakers or coaxials, you will want to set the mode switch to HI PASS. The FREQUENCY control knob adjusts the high pass frequencies between 50Hz and 250Hz. Do not attach tweeters directly to these amplifiers, even in the high pass mode without a secondary passive crossover to protect them. 250Hz high pass is not a frequency high enough for tweeters.



Q Series two channel crossover section, located under the light up plastic plate.

ADJUSTING THE SYSTEM

Once the system is operational, the first thing to do, is set all crossover points to approximate settings. In the case of the basic subwoofer system Low Pass filter crossover at 100 Hz or so. Set the Bass Boost equalizer controls to 0 dB

Now you should set the amplifiers LEVEL adjustment. The knob accessible on the top of the amplifier marked Input Level adjusts the input sensitivity from 150mV to 5Volts.

To adjust the input sensitivity, turn the control using a small flat head screwdriver fully counter clock wise to the minimum position. Do not apply any pressure while turning as this might break the control unit. Adjust your radio volume level to maximum volume. Now turn the level control on the amplifier clockwise towards the Maximum marking and until audible distortion occurs. When you begin to hear any distortion in the sound, back down one notch and your amp is set. It is helpful to have a second person to help you set the gain.

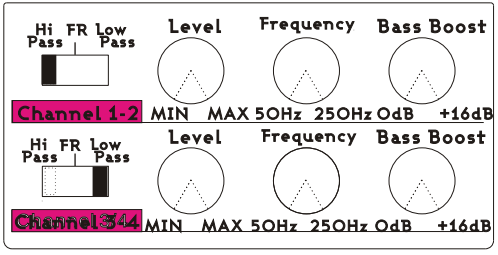
When setting up a multi-amp system, set each amplifier's gain separately. Start off with the bass amplifier, then adjust the highs amplifier's level control to match.

Once you are satisfied with the level control settings, use the equalizer controls to adjust the system tonal level for personal preference. Keep in mind that after equalizing, you may have to go back and reset the level controls.

The level control of any car amplifier should not be mistaken for a volume control. It is a sophisticated device designed to match the output level of your source unit to the input level of the amplifier. Do not adjust the amplifier gain to maximum unless your input level requires it.

If your unit has been professionally installed please do not change the gain settings set by the installer, he is the professional!

Your system can also be extremely sensitive to noise when the LEVEL is set to maximum and does not match your input signal. The gain adjustments need to be made only once when first setting up the system.



USING THE ELECTRONIC CROSSOVER - 4 CHANNEL MODEL

The four channel models feature separate crossovers for channels 1-2 and 3-4. All the Q Series amplifiers feature 12dB per octave fully adjustable low-pass and high pass electronic crossovers.

FOUR CHANNEL AMPLIFIER CONFIGURATIONS.

1. All four channels High Pass for internal component speakers in doors and rear decks.

2. Channels 1 and 2 High Pass for front component speakers, while channels 3 and 4 are wired to subwoofers.

3. Bridge channels 1 and 2 for single high power subwoofer channel. Bridge channels 3 and 4 for second high power subwoofer channel.

For Low Pass systems, set the crossover mode switch to LOW PASS. Now the knob marked FREQUENCY will control the low pass frequencies from 50Hz to 250Hz. A frequent mistake made is setting the low pass frequency too low, especially when using vented subwoofer enclosures. We recommend that for most installations you do not set the frequency knob lower than 100Hz (the 12 o'clock position).

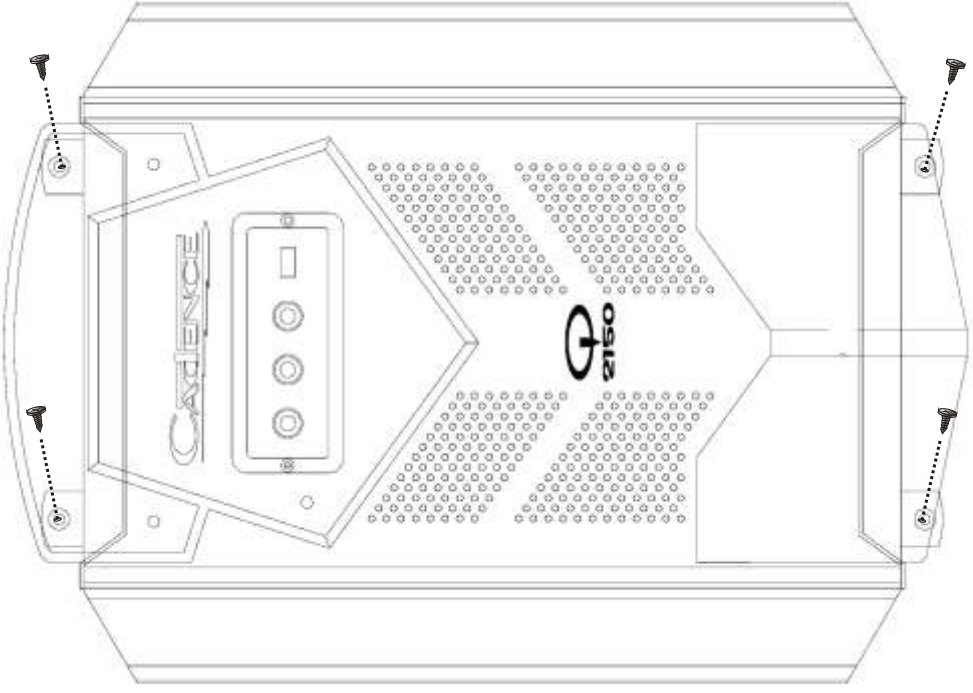
When using the amplifiers for component speakers or coaxial, you will want to set the mode switch to HI PASS. The FREQUENCY control knob adjusts the high pass frequencies between 50Hz and 250Hz. Do not attach tweeters directly to these amplifiers, even in the high pass mode without a secondary passive crossover to protect them. 250Hz high pass is not a frequency high enough for tweeters.

MOUNTING THE AMPLIFIERS:

Choose a convenient mounting location with unobstructed airflow.

The Q amplifiers feature four plastic mounting tabs located at the amplifiers four corners. You will need to remove the light-up acrylic panel and the chrome trim plate to access these mounting tabs.

Using the supplied screws, gently mount the amplifier in to position. Do not over tighten the screws.



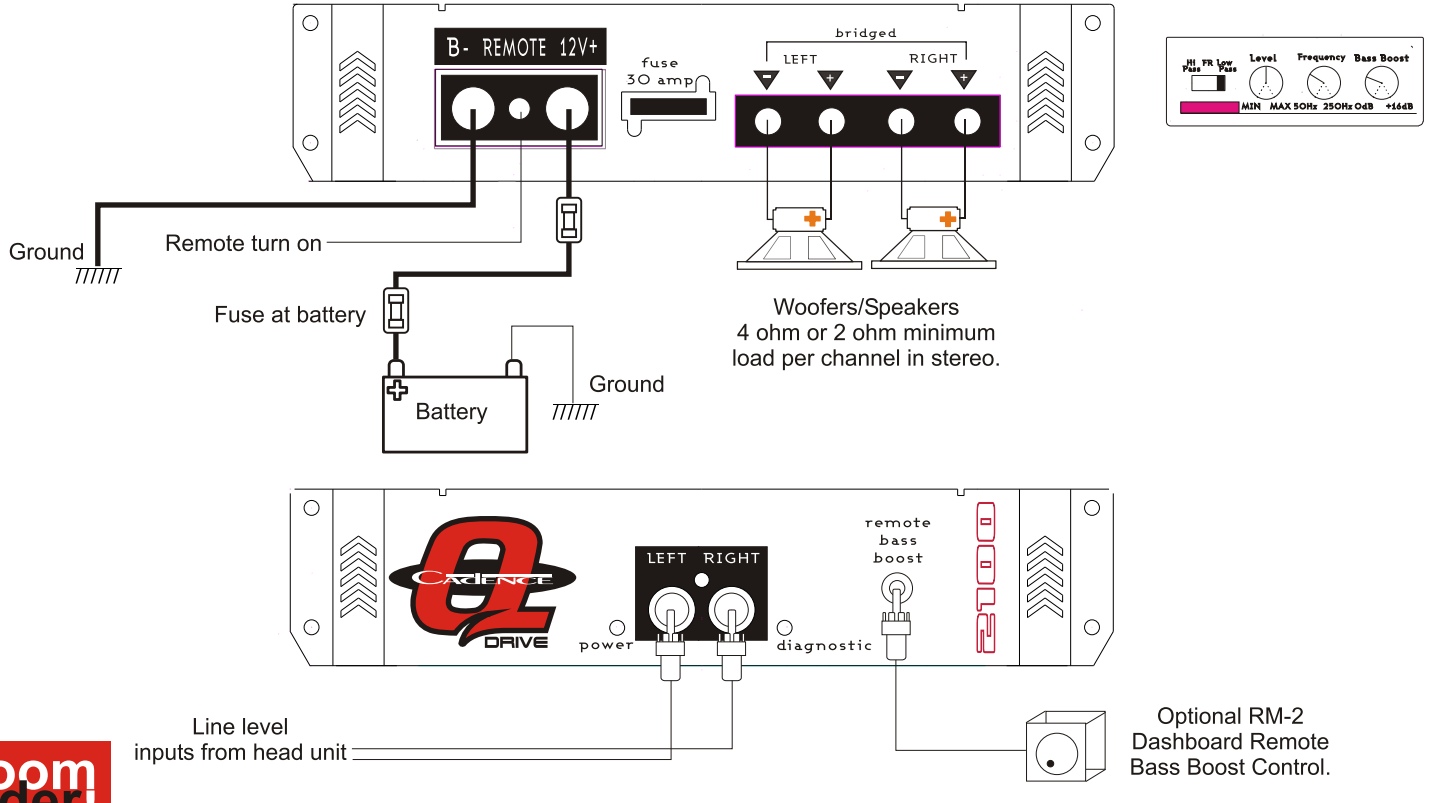
LIGHT-UP ACRYLIC COVERS

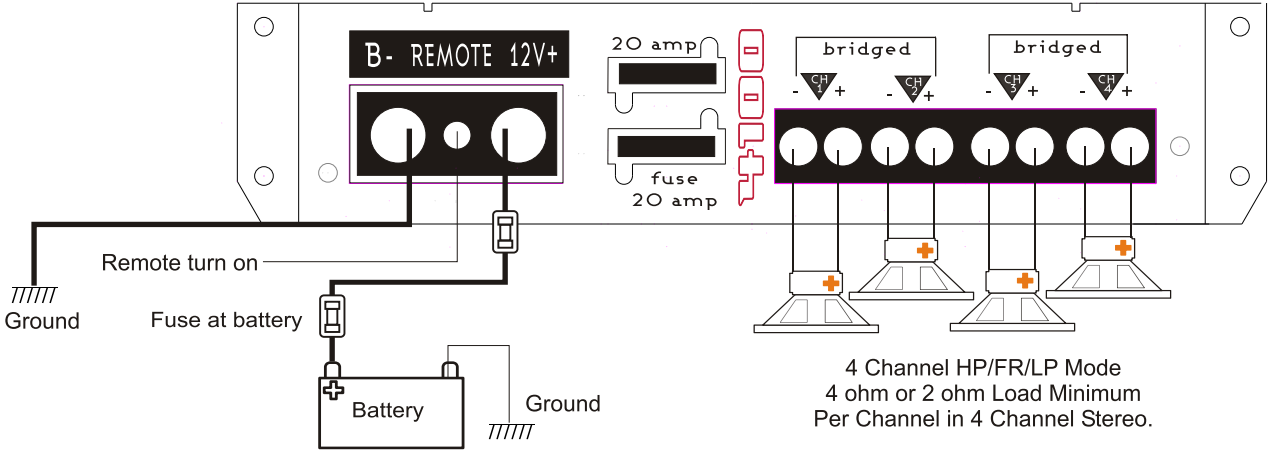
All Q series amplifiers come with three molded acrylic covers in red, blue and orange. The cover is held down with four thumb screws. The amplifier crossover and gain controls are located under the cover. Please note that the length of the four thumb screws are different, there are two short ones and two long ones. The shorter screws are for the lower shelf of the acrylic cover, while the longer screws fit the raised shelf area of the acrylic cover.

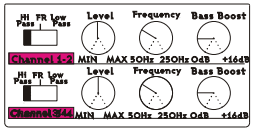
There is an area of multiple white neon LED bulbs underneath the cover which transmit the light through the cover. By simply changing the cover you can change your amplifier installation color to either blue, red or orange.

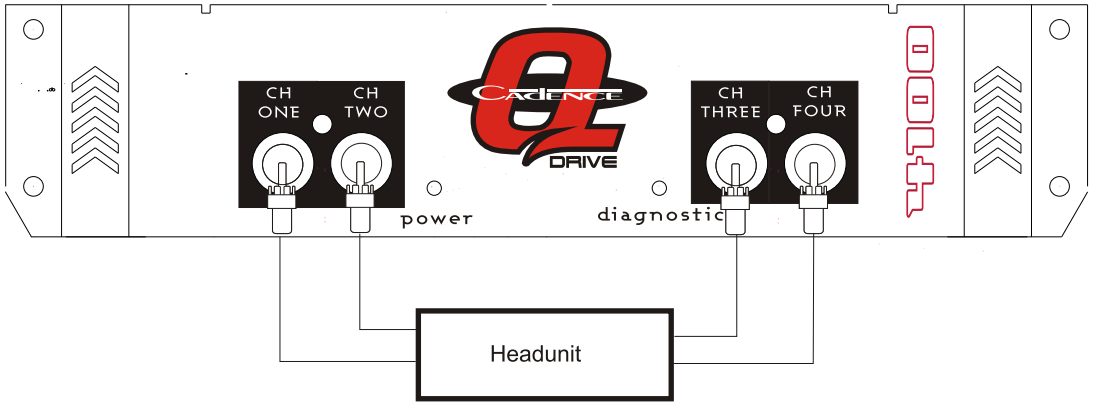
Please take special care not to scratch the surface of the acrylic covers. Clean them only with a soft damp towel. The use of any cleansers may scratch the surface and remove the silver stamping of the logo.

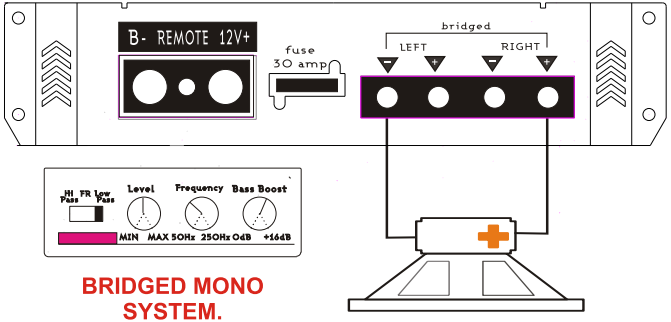
Replacement covers and thumb screws are available from Cadence.


B- REMOTE 12V+
fuse
30 amp
bridged
LEFT
RIGHT
Hi Pass
FR Low Pass
Level
Frequency
Bass Boost
MIN
MAX 50Hz 250Hz 0dB +16dB
Ground
Remote turn on
Fuse at battery
Battery
Ground
Woofers/Speakers
4 ohm or 2 ohm minimum
load per channel in stereo.
CADENCE
DRIVE
LEFT RIGHT
power
diagnostic
remote
bass
boost
Line level
inputs from head unit
Optional RM-2
Dashboard Remote
Bass Boost Control.


B- REMOTE 12V+
20 amp
fuse
20 amp
bridged
bridged
Remote turn on
Ground
Fuse at battery
Battery
Ground
4 Channel HP/FR/LP Mode
4 ohm or 2 ohm Load Minimum
Per Channel in 4 Channel Stereo.

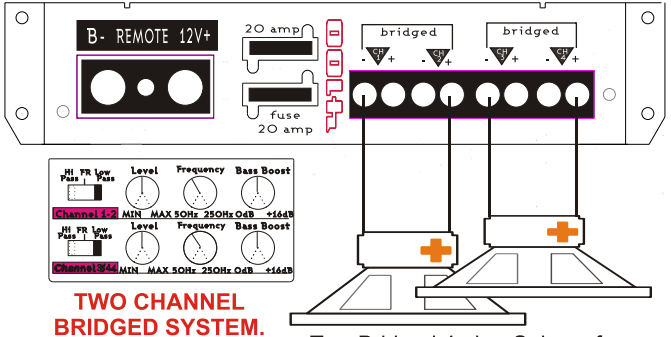

Hi Pass
FR
Low Pass
Level
Frequency
Bass Boost
Channel 1+2
MIN MAX 50Hz 250Hz 0dB +16dB
Channel 3+4
MIN MAX 50Hz 250Hz 0dB +16dB


CH ONE
CH TWO
CADENCE
DRIVE
CH THREE
CH FOUR
power
diagnostic
Headunit



BRIDGED MONO SYSTEM.

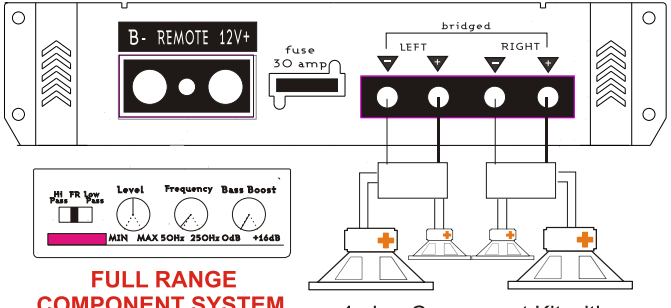
Bridged 4 ohm Subwoofer



TWO CHANNEL BRIDGED SYSTEM.

Two Bridged 4 ohm Subwoofers.

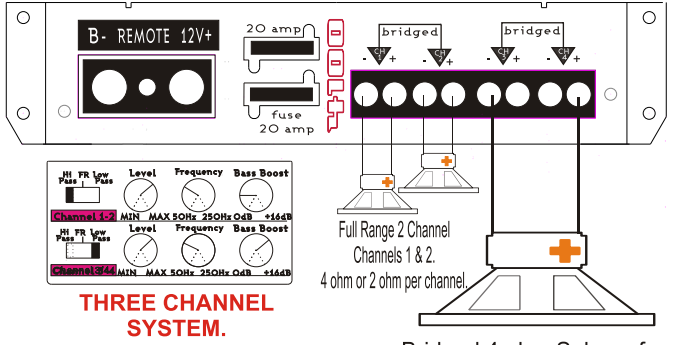
TWO CHANNEL AMPLIFIER OPTIONS



FULL RANGE COMPONENT SYSTEM.

4 ohm Component Kit with Passive Crossovers.

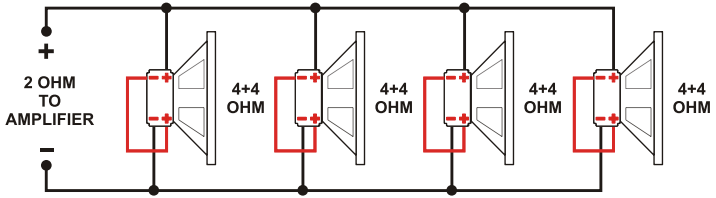
FOUR CHANNEL AMPLIFIER OPTIONS



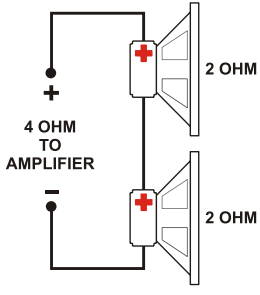
THREE CHANNEL SYSTEM.

Bridged 4 ohm Subwoofer

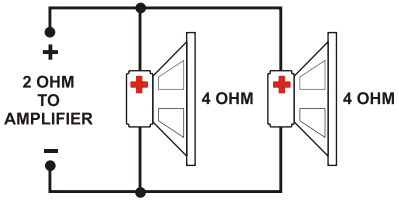
4 X DUAL VC 8 OHM SPEAKERS WITH SERIES VOICE COILS, ALL IN PARALLEL



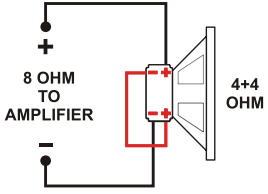
SERIES: SINGLE VOICE COIL SPEAKERS

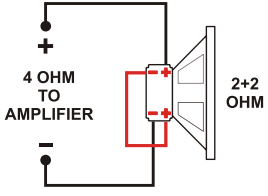


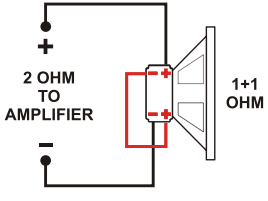
PARALLEL: SINGLE VOICE COIL SPEAKERS



SERIES: DUAL VOICE COIL SPEAKERS





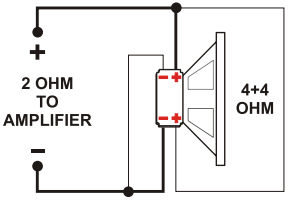


Please note that the minimum impedance load for single Cadence Q Series amplifiers is 2 ohm stereo and 4 ohm mono bridged.

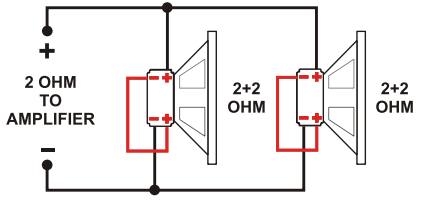
Lower impedance loads will cause overheating and may damage the amplifiers.

Do not mix different type and different impedance speakers in the series and/or parallel combinations, as unequal power sharing and acoustic outputs will result.

PARALLEL: DUAL VOICE COIL SPEAKERS



2 X DUAL VC 2 OHM SPEAKERS WITH SERIES VOICE COILS, ALL IN PARALLEL



SPECIFICATIONS

OUTPUT POWER	Q2100	Q2150	Q2300	Q4100
4 Ohm Stereo Power:	2 x 75 Watts	2 x 125 Watts	2 x 175 Watts	4 x 75 Watts
2 Ohm Stereo Power:	2 x 125 Watts	2 x 175 Watts	2 x 250 Watts	4 x 125 Watts
4 Ohm Bridged Mono Power:	1 x 250 Watts	1 x 350 Watts	1 x 500 Watts	2 x 250 Watts
Dimensions (LxWxH):	9” x 10.75” x 2.5”	12.75” x 10.75” x 2.5”	17.75” x 10.75” x 2.5”	13.75” x 10.75” x 2.5”

COMMON TO ALL MODELS

Input level adjustment range:	150 mV to 5 Volt
Low pass filter adjustment range:	50 Hz to 250 Hz
Low pass filter slope:	12 dB/octave
Bass boost range:	0 dB to +12 dB
Bass boost center frequency adjustment range:	45 Hz
Signal to noise ratio:	> 100 dB
Damping factor:	>200 @ 100 Hz
Minimum THD&N:	<0.05%
Frequency Response:	20Hz - 35KHz